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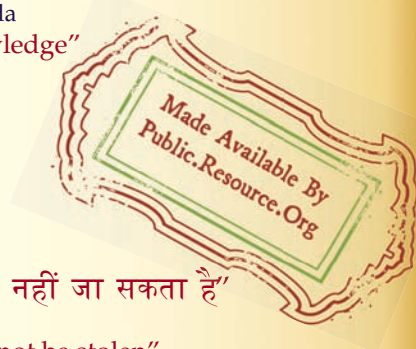
IS 2219 (1962): Feeds for Machine Tools [PGD 3: Machine Tools]



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“Knowledge is such a treasure which cannot be stolen”

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IS: 2219-1962
(Reaffirmed 1985)

Indian Standard
FEEDS FOR MACHINE TOOLS
(Fifth Reprint JUNE 1986)

UDC 621.9-229.6



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

GP 2

January 1963



AMENDMENT NO. 1 OCTOBER 1982

TO

IS : 2219 - 1962 FEEDS FOR MACHINE TOOLS

Alteration

(*Page 5, Table 1, foot-note with '†' mark*) — Substitute the following for the existing foot-note:

‘†Actual limits of feeds per revolution or stroke in columns 4 and 5 correspond to the mechanical tolerance only since feed per revolution or per stroke is independent of the motor. The resulting feed per minute which is the product of the feed per revolution or per stroke and the speed per minute may vary by the combined action of the tolerance on these two factors between + 9 percent and - 4 percent.’

Addenda

(*Page 4, clause 3.1.2*) — Add the following new clause after 3.1.2:

‘3.1.3 Either the full series R20 or any of the following series may be chosen as the complete range of basic values for the feeds of a machine tool so as to meet its requirements:

R10, R5, R20/3 (..... 1.....) and R 10/3 (..... 1.....)

NOTE — In case of derived series R20/3 and R 10/3, the figures (with due regard to the decimal point) repeat themselves only in fourth decimal range.’

(*Page 4, clause 3.2.2*) — Add the following new clause after 3.2.2:

‘3.2.3 The allowable limits for the actual values have been determined not from the basic values of R20 series but from the corresponding theoretical values of geometric series with ratio $20\sqrt{10}$ (values rounded-off to the third decimal place).’

(EDC 11)

Indian Standard

FEEDS FOR MACHINE TOOLS

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IS : 2219 - 1962

(Continued from page 1)

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Indian Standard

FEEDS FOR MACHINE TOOLS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 3 December 1962, after the draft finalized by the Machine Tools Sectional Committee had been approved by the Engineering Division Council.

0.2 In view of a large amount of trade of machine tools existing between various countries of the world, the Machine Tools Technical Committee of the International Organization for Standardization (ISO/TC 39) has prepared an ISO Recommendation for Machine Tool Speeds and Feeds (ISO/R 229). This standard is based on ISO/R 229.

0.3 Feeds covered by this standard may be *either* the feed per minute under load when the feed mechanism is directly driven by the motor, *or* the feed per revolution (or per stroke) of the spindle, if it is driven by the spindle or the element providing the main cutting motion.

1. SCOPE

1.1 This standard specifies the feeds and tolerances on feeds for machine tools.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Basic Value—Value of feed which is shown on the plate of the machine and is used for calculating the machining time.

2.2 Actual Value— Value of feed which lies within the prescribed limits of tolerances. The feed per minute is conventionally calculated as follows:

$$\text{Feed under load} = \text{feed without load} \times \frac{N_o}{N_s}$$

where

N_o = speed of the motor, under load, indicated on the name plate; and

N_s = speed of the motor measured when the machine is running under no load.

2.2.1 The feed per minute or per stroke is not related to the motor.

3. BASIC VALUES AND TOLERANCES

3.1 Basic Values

3.1.1 The basic values for the feeds of machine tools, derived from R 20 Series of Preferred Numbers, shall be as given in Table I.

3.1.2 Table I may be extended upwards or downwards by multiplying or dividing respectively the given values of feed by 10 or a positive integral power of 10.

3.2 Tolerances

3.2.1 Tolerance on Feed in Millimetres per Minute (Taken Independently of the Element Providing the Main Cutting Motion)— A total tolerance of plus 6 percent and minus 2 percent shall be provided on the basic value of the feed when the feeds are expressed in millimetres per minute. This total tolerance comprises an electrical tolerance of about plus 3 percent and zero percent and a mechanical tolerance of about plus 3 percent and minus 2 percent.

3.2.1.1 Limits of feeds per minute, calculated on the basis of the total tolerance of plus 6 percent and minus 2 percent, shall be as given in Table I.

3.2.2 Tolerance on Feed in Millimetres per Revolution or Stroke— The feed per revolution or stroke is independent of the motor and hence only mechanical tolerance of the gear box shall be applicable to it. The limits of feeds per revolution, calculated on the basis of the mechanical tolerance of about plus 3 percent and minus 2 percent, shall be as given in Table I.



AMENDMENT NO. 1 OCTOBER 1982
TO
IS : 2219 - 1962 FEEDS FOR MACHINE TOOLS

Alteration

(*Page 5, Table 1, foot-note with '†' mark*) — Substitute the following for the existing foot-note:

'†Actual limits of feeds per revolution or stroke in columns 4 and 5 correspond to the mechanical tolerance only since feed per revolution or per stroke is independent of the motor. The resulting feed per minute which is the product of the feed per revolution or per stroke and the speed per minute may vary by the combined action of the tolerance on these two factors between + 9 percent and - 4 percent.'

Addenda

(*Page 4, clause 3.1.2*) — Add the following new clause after 3.1.2:

'3.1.3 Either the full series R20 or any of the following series may be chosen as the complete range of basic values for the feeds of a machine tool so as to meet its requirements:

R10, R5, R20/3 (..... 1.....) and R 10/3 (..... 1.....)

NOTE — In case of derived series R20/3 and R 10/3, the figures (with due regard to the decimal point) repeat themselves only in fourth decimal range.'

(*Page 4, clause 3.2.2*) — Add the following new clause after 3.2.2:

'3.2.3 The allowable limits for the actual values have been determined not from the basic values of R20 series but from the corresponding theoretical values of geometric series with ratio $20\sqrt[10]{10}$ (values rounded-off to the third decimal place).'

TABLE I FEEDS FOR MACHINE TOOLS IN MILLIMETRES

(Clauses 3.1.1, 3.1.2, 3.2.1.1 and 3.2.2)

BASIC VALUE OF FEED	LIMITS OF FEEDS			
	Per Minute*		Per Revolution or Stroke†	
	(Tolerance $\pm \frac{6}{2}$ Percent Approx)		(Tolerance $\pm \frac{5}{2}$ Percent Approx)	
	Min	Max	Min	Max
(1)	(2)	(3)	(4)	(5)
1	0.98	1.06	0.98	1.03
1.12	1.10	1.19	1.10	1.16
1.25	1.23	1.33	1.23	1.30
1.4	1.38	1.50	1.38	1.45
1.6	1.55	1.68	1.55	1.63
1.8	1.74	1.88	1.74	1.83
2	1.96	2.12	1.96	2.06
2.24	2.19	2.37	2.19	2.31
2.5	2.46	2.66	2.46	2.59
2.8	2.76	2.99	2.76	2.90
3.15	3.10	3.35	3.10	3.26
3.55	3.48	3.76	3.48	3.65
4	3.90	4.22	3.90	4.10
4.5	4.38	4.73	4.38	4.60
5	4.91	5.31	4.91	5.16
5.6	5.51	5.96	5.51	5.79
6.3	6.18	6.69	6.18	6.50
7.1	6.94	7.50	6.94	7.29
8	7.78	8.42	7.78	8.18
9	8.73	9.45	8.73	9.18
10	9.80	10.6	9.80	10.3

*Limits given for the actual values of feeds per minute in col 2 and 3 correspond to the sum of electrical and mechanical tolerances. The mechanical tolerance is calculated for feeds per revolution from values in col 4 and 5, but, for the calculation of the transmission ratio of the driving equipment, the speed at the input is taken as 6 percent less than the synchronous speed of the motor. The quotient of the speed at the input by each of the two tabulated limits gives the extreme values of the transmission ratio.

†Actual limits of feeds per revolution or stroke in col 4 and 5 correspond to the mechanical tolerance only.

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IS : 3397 - 1978
(Superseding IS : 706 - 1955)

Indian Standard
SPECIFICATION FOR
COMMUNITY RADIO RECEIVERS
(*First Revision*)

UDC 621.396.62



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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 7.00

August



AMENDMENT NO. 1 JUNE 1982
TO
IS : 3397 - 1978 SPECIFICATION FOR
COMMUNITY RADIO RECEIVERS

(First Revision)

Alterations

(Page 3, clause 0.2.1, line 3) — Substitute 'solid state devices' for 'transistors'.

(Page 4, clause 1.1, line 1) — Delete the word 'other'.

(Page 5, clause 4.2.2, line 2) — Substitute '0.916 mm' for '1.25 mm'.

(Page 6, clause 4.3.1, line 1) — Substitute '0.916 mm' for '1.25 mm'.

(Page 6, clause 4.3.2, last line) — Substitute '3.0 mm' for '3.2 mm' and '15.0 mm' for '19.0 mm'.

[Page 7, clause 6.1(a) and 6.1(c)] — Substitute the following for the existing matter:

'a)	Rated Voltage	Operating Voltage		
		Max	Nom	Min
	V	V	V	V
Main supply ac	240	250	240	200

Variation in mains supply frequency (50 Hz) shall be within ± 2 percent.

c) Battery cum-mains supply operation.'

(Page 7, Note under clause 6.1) — Delete.

(Page 7, clause 6.1.1) — Substitute the following for the existing clause:

'6.1.1 The battery shall be contained within the receiver itself or outside the receiver as may be specified by the purchaser. It shall be possible to replace the battery without dismantling the receiver (if contained within the receiver).

Price ₹ 1

(Page 7, clause 7.2.1, lines 2 and 3) — Substitute ' 526 to 1 606.5 kHz ' for ' 525 to 1 605 kHz '.

[Page 8, clause 7.2.2.1(a)] — Substitute ' 526-1 606.5 kHz ' for ' 525-1 605 kHz '.

(Page 8, clause 7.3, last line) — Substitute ' ± 20 kHz ' for ' ± 10 kHz '.

(Page 8, clause 7.4, line 2) — Substitute ' 459 kHz ' for ' 455 kHz '.

(Page 8, clause 7.5.1) — Substitute the following for the existing clause:

' 7.5.1 The receiver shall be provided with output impedances of 4 ohms or 8 ohms or 16 ohms. '

(Page 9, clause 7.8) — Substitute the following for the existing clause:

' **7.8 Automatic Gain Control Characteristic** — The output of receiver shall not vary by more than 6 dB when the input signal is varied by 30 dB starting from an upper limit of 5 mv. '

(Page 9, clause 7.14) — Substitute the following for the existing clause:

' 7.14 The maximum useful output power shall be determined in accordance with 4.13 of IS : 614-1964* and shall be available under condition of operation with maximum ambient temperatures not exceeding 45°C. The value shall be:

a) For mains operated receiver — 2 W, and

b) For battery and battery-cum-mains operated receiver-800 mW, at normal voltage and not less than 400 mW at reduced voltage in case of battery operation: '

(Page 10, clause 7.15, informal table, second column, first entry) — Substitute ' 23 mA ' for ' 230 mA '.

(Page 10, clause 7.17) — Delete.

(Page 12, clause 10.2.2, para 1) — Substitute the following for the existing para:

'The receivers shall withstand the dry heat test of severity 55°C, 16 h, carried out in accordance with IS : 9000(Part III/Sec 5)-1977*.'

(Page 12, clause 10.2.3, para 1) — Substitute the following for the existing para:

' The receiver shall withstand 2 cycles of damp heat test of severity + 40°C, carried out in accordance with IS : 9000(Part V/Sec 3)†.'

(Page 12, foot-notes with ' * ' and ' † ' marks) — Substitute the following for the existing foot-notes:

(* Basic environmental testing procedures for electronic and electrical items: Part II Dry heat test, Section 5 Dry heat test for dissipating items with gradual change of temperature.

† Basic environmental testing procedures for electronic and electrical items: Part V Damp heat (cycle), Section 3 (under preparation).

(Page 13, clause 10.2.4, para 1) — Substitute the following for the existing para:

' The receiver shall withstand, if required, a cold test of severity -10°C , 16 h, carried out in accordance with IS : 9000 (Part II/Sec 4)-1977* . '

(Page 13, clause 10.2.5, para 1) — Substitute the following for the existing para:

' The receiver complete in cabinet shall be subjected to bump test of severity 4 000 bumps, 400 m/s², carried out in accordance with IS : 9000 (Part VII/Sec 3)-1979† . '

(Page 13, foot-notes with ' * ' and ' † ' marks) — Substitute the following for the existing foot-notes:

* Basic environmental test procedures for electronic and electrical items: Part II Cold test, Section 4 Cold test for heat dissipating items with gradual change of temperature.

† Basic environmental test procedures for electronic and electrical items: Part VII Impact test, Section 3 Drop and topple.

Addenda

(Page 4, clause 1.1, line 1) — Add the word ' mechanical ' between ' environmental and electrical '.

(Page 5, clause 4.2.3, line 2) — Add the words ' both inside and outside ' between ' pre-treatment ' and ' and '.

[Page 8, clause 7.2.2.1(b) (1)] — Add the following new note after 7.2.2.1(b)(1):

' Note — This band will extend up to 9900 kHz when the final acts of the WARC to be convened for the planning of HF bands allocated to broadcasting service, come into force. '

(c) : [Page 11, clause 10.1.1(c)] — Add the following new matter after

' f) Environmental tests specified in 10.2. '

(Page 12, clause 10.1.2) — Add the following new clause after 10.1.2:

‘ 10.1.3 *Routine Tests* — The following shall constitute the routine tests:

- a) Visual examination,
- b) Maximum useful output power, and
- c) Noise limited sensitivity. ’

(LTDC 20)